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ANALYSIS OF THE FACTORS AND PREDICTORS OF ADHERENCE TO HEALTHCARE OF PEOPLE LIVING WITH HIV/AIDS IN TERTIARY HEALTH INSTITUTIONS IN ENUGU STATE

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ABSTRACT

Survival of people living with HIV/AIDS (PLWHA) has increased since the emergency of High active antiretroviral therapy (HAART) in 1996. The study was aimed to analyse the factors and predictors of adherence of people living with HIV/AIDS in tertiary health institutions in Enugu state. This was a descriptive cross-sectional study design. The study population consisted of those diagnosed for HIV / AIDS at tertiary health institutions in Enugu State. The total numbers of clients enrolled were 793 and 249 clients were loss to follow up, majority was males. Those initiated on ART were 544. Clients of age <15 years were excluded and they were 31 clients. Finally, 500 clients were selected, males were 138 and female were 362 by simple random sampling techniques. Data was collected from HIV / AIDS patients ART record cards, registers and institutions data units for those initiated on ART in 2014 using a designed proforma. Those clients aged 15 years and above were retrospectively studied between the year 2014- 2018 and some of them that survived after five years (60 months) on ART were interviewed by applying simple random sampling technique. Cohort inclusion begins at initiation on ART with follow-up clinical information collected year by year for five years. IBM SPSS statistics version 24.0 was used. Chi square test was used to assess association between categorical variables and the level of statistical significance of the proportions was determined by a P-value less than 0.05. Manual content analysis was used for the interview and probability of dying and surviving analysis. Adherence was statistically significant, $p<0.001$ among
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clients who had obtained tertiary 105 (92.1%) and secondary, 124 (57.7%) education, who lived within the state with the place of care, 234 (76.0%), and those retired, 12 (63.2%) and the unemployed, 46 (61.3%). None missing of ART intake (100%), lack of stigmatization (66.7%), urban residence (66.7%), having employment (75%), and middle class wealth index (58.3%) were discovered as factors responsible for the survival of those under care after five years of study. Financial constraints, occupational and educational factors and stigmatization were the major reasons accounting for non-adherence which could affect PLWHA. Implementing policies and programmes that will involve the contribution of local government councils are recommended to assist those in rural areas.

***Key words**: People living with HIV/AIDS, HIV, adherence, ART*

INTRODUCTION

The HIV epidemic continues to be a major global public health issue until is totally eradicated. In 2018, there were 37.9 million men, women, and children living with HIV/AIDS globally, while those newly infected with HIV in 2018 were 1.7 million men, women and children and there were 770,000 AIDS-related deaths in 2018.[1] Cameroon, Cóte d'Ivoire and Nigeria account for close to 60% of new HIV infections and 54% of AIDS-related deaths each year. Decisive improvements in their national HIV programmes would have a major impact on the region's overall HIV response. The recent Nigeria AIDS Indicator and Impact Survey (NAIIS) found lower HIV prevalence than earlier surveys, which led to a revision of the country's HIV estimate. The latest regional estimates reflect this additional information, with lower estimates of people living with HIV, AIDS-related deaths and HIV infections than previous eatimates.[1]

Nigeria is among the six nations facing the triple threat of high HIV burden, low ART coverage, and unsatisfactory decline in new HIV infections and poor viral suppression.[2] Globally, about 3.8 million Nigerians are estimated to be living with HIV.[4] Together with South Africa and Uganda, Nigeria accounted for half of the new HIV infections in Sub-Saharan Africa in 2017.[3] Even though the number of people placed on ART in Nigeria has slowly improved over the years to 970,000 in 2016.[4], only 34 percent of adult positive clients are said to be receiving treatment.[5]

Survival of people living with HIV / AIDS (PLWHA) has increased since the emergency of High active antiretroviral therapy (HAART) in 1996. Fewer HIV / AIDS-related deaths and cohort have resulted in an increase in the proportion of HIV / AIDS patients dying from non-HIV/AIDS-related disorders[6-10]. Low level of access to antiretroviral treatment, inadequate laboratory facilities (for monitoring their viral load, CD4 cell counts etc) , knowledge and attitude of some patients, cultural believe, punitive laws against homosexual, and increase in HIV and TB co-infection remain an issue for PLWHA, meaning that there are still many HIV / AIDS related deaths in Nigeria.[4]

METHODOLOGY

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Study Area

The study was conducted in Enugu state, Nigeria.

Study Design:

A descriptive cross-sectional study design was adopted.

Study Duration

The study was conducted from the year 2014-2018 (for a period of 5 years).

Study Population and Health Facilities

The study population consisted of those diagnosed for HIV / AIDS at two tertiary health institutions in Enugu State; Enugu State University of science and technology teaching hospital, Parklane (ESUTHP) and University of Nigeria teaching hospital (UNTH). These tertiary health facilities are where most persons diagnosed with HIV/AIDS are referred to. This is because they are very equipped with all the necessary services. And they are located in both urban (ESUTHP) and rural area (UNTH) of the State. Baselines for clinical and laboratory investigations such as; viral load, CD4 cell counts, haematological and biochemical parameters and general management are carried out there. Those clients aged 15 years and above were followed-up between 2014 and 2018 and some of those survived after five years (60 months) on ART were interviewed by applying simple random sampling selection.

Inclusion criteria: all PLWHA aged 15 years and above that were initiated on ART in the year 2014 at both health institutions. Exclusion criteria: all PLWHA less than 15 years of age that were initiated on ART in the year 2014 at both health institutions.

The minimum sample size was determined by using a Fisher's formula.

$N = Z^2pq/d^2$

Where:

n = desired sample size

Z = the standard normal deviate set at 1.96 which correspond to 95% confidence level.

P = estimated proportion of the attribute present in the population. And q = 1- P

d = degree of precision desired set at 0.05 (error margin of 5%)

Therefore

$n = 1.96^2 \times 0.5 \times (1-0.5)/0.05^2$

n =384 + 10 % attrition

Therefore, a minimum sample (n) = 384+38=422.

A total of 500 PLWHA aged 15 years and above were studied.

Sampling Technique

A multistage sampling technique was adopted.

Selection of participants

A simple random sampling technique was used to select PLWHA that were 15 years of age and above from clinic records, registers and data units.

Data Collection Tools

Data was collected from HIV / AIDS patients ART record cards, registers and institutions data units at UNTH and ESUTH for those initiated on ART in 2014 using a designed proforma and one-on-one structured interview of those survived after five years on ART. Data collected include; socio-demographic variables, clinical and immunological characteristics (CD_4 cell counts, Viral Load). Microsoft Excel, 2013 was used to clean those collected data to ensure missing variables will be re-collected and confirmed using paper-based patient ART records and registers. Socio-demographic and clinical characteristics were considered as the independent variables, and three trained graduates research assistants were involved.

Statistical Analysis

Cohort inclusion begins at initiation on ART with follow-up clinical information collected year by year for five years. The Excel dataset was imported into IBM SPSS statistics version 24.0 (IBM Corp; Amonk, NY, USA). Socio-demographic and clinical characteristics were described using the frequency and proportion for categorical variables. Chi square test was used to assess association between categorical variables and statistical significance of the proportions was set at P-value less than 0.05. Manual content analysis was used based on the topic guide of the interview. Probability of dying and surviving was done using Manual content analysis also.

Manual content analysis was used for both interview and probability of dying.

Formular for probability of dying:

Number of persons on ART in a giving period – (Number dead +transferred+LOFU)

Number of persons dead

Therefore probability of surviving = 1 – probability of dying.

And proportion = 1 – probability of dying x 100

Ethical Considerations

Ethical clearances were obtained from Enugu State University of science and technology teaching hospital, Parklane (ESUTHP) with reference number: ESUTHP/C-MAC/RA/034/100 and University of Nigeria teaching hospital (UNTH) with reference number: UNTH/CSA/329/VOL.5 through their Ethics and Research committees. Confidentiality was maintained at all stages of the data collections.

Strength of this Study

The major strength of this study is that it was conducted at all the tertiary health institutions in Enugu state that are fully equipped for the management of PLWHA.

RESULTS

Table 1a: Analysis for the Factors and Predictors of Adherence among PLWHA at 12 Months

VARIABLE	FREQUENCY n = 500	ADHERENCE		X^2	P-value	DECISIONS
		Good (%)	Poor (%)			
AGE AT DIAGNOSIS						
15-24	34	19 (55.9)	15 (44.1)	4.118	>0.05	Not significant
25-34	150	103 (68.7)	47 (31.3)			
35-44	180	110 (61.1)	70 (38.9)			
45-54	75	49 (65.3)	26 (34.7)			
≥ 55	61	43 (70.5)	18 (29.5)			
GENDER						
MALE	138	86 (62.3)	52 (37.7)	0.514	>0.05	Not significant
FEMALE	362	238 (65.7)	124 (34.3)			

MARITAL STATUS						
SINGLE	138	87 (63.0)	51 (37.0)	7.892	>0.05	Not significant
MARRIED	272	182 (66.9)	90 (33.1)			
DIVORCED	7	7 (100)	0 (0.0)			
SEPARATED	8	3 (37.3)	5 (62.5)			
WIDOWED	75	45 (60.0)	30 (40.0)			
RELIGION						
NOT SPECIFIED	1	1 (100)	0 (100)	4.300	>0.05	Not significant
CHRISTIANITY	450	290 (64.4)	160 (35.6)			
ISLAMIC	27	7 (25.9)	20 (74.1)			
TRADITIONAL	17	12 (70.6)	1.(29.4)			
OTHERS	6	2(33.3)	4(66.7)			

Table 1b: Analysis for the Factors and Predictors of Adherence among PLWHA at 12 Months

VARIABLE	**FREQUENCY n = 500**	**ADHERENCE**		**X^2**	**P-value**	**DECISIONS**
		Good (%)	**Poor (%)**			
OCCUPATION						
UNEMPLOYMENT	75	49 (65.3)	26 (34.7)	8.166	>0.05	Not significant
SELF EMPLOYMENT	267	165 (61.8)	102 (38.2)			
PUBLIC SERVANTS	113	73 (64.6)	40 (35.4)			
RETIRED	20	14 (73.7)	6 (26.3)			
STUDENTS	25	22 (88.0)	3 (12.0)			
EDUCATION						
NOT SPECIFIED	18	10 (55.6)	8 (44.4)	67.951	<0.001	Significant
PRIMARY	118	54 (45.8)	64 (54.2)			
SECONDARY	215	124 (57.7)	91 (42.3)			

TERTIARY	114	105 (92.1)	9 (7.9)			
NO FORMAL EDU	35	11 (31.4)	24 (68.6)			
PLACE OF RESIDENCE						
ENUGU STATE	308	234 (76.0)	74 (24.0)	54.169	<0.001	Significant
ANAMBRA	72	42 (58.3)	30 (41.7)			
EBONYI	57	30 (52.6)	27 (47.4)			
IMO	43	18 (52.9)	16 (47.1)			
ABIA	14	3 (21.4)	11 (78.6)			
OTHERS	15	4 (26.7)	11 (73.3)			

Table 1a above shows the adherence at 12 month. Adherence was statistically significant among clients who had obtained tertiary and secondary education, 105 (92.1%) and 124 (57.7%) respectively when compared with other educational level, p<0.001. It also showed that adherence was highest for subjects who lived within the state with the place of care, 234 (76.0%) and those who lived in Anambra State, 18 (58.3%), p<0.001.

Though marital status, gender and age are not significant, but devoiced (100.0%), female (65.7%) and age ≥55 years (70.5%) had highest proportion to adherence when compared with others.

Table 2a: Analysis for the Factors and Predictors of Adherence among PLWHA at 24 Months

VARIABLE	**FREQUENCY n=500 (%)**	**ADHERENCE**		**X^2**	**P-value**	**DECISIONS**
		Good (%)	**Poor (%)**			
AGE AT DIAGNOSIS						
15-24	34 (100)	13 (38.2)	21 (61.8)	6.568	>0.05	Not significant
25-34	150 (100)	68(45.3)	82 (54.7)			
35-44	180 (100)	79 (43.9)	101 (56.1)			
45-54	75 (100)	38 (50.7)	37 (49.3)			
≥ 55	61(100)	34 (55.7)	27 (44.3)			
GENDER						
MALE	138 (100)	60 (43.5)	78 (56.5)	2.497	>0.05	Not significant
FEMALE	362 (100)	186 (51.4)	176 (48.6)			

MARITAL STATUS						
SINGLE	138 (100)	68 (49.3)	70 (50.7)	4.226	>0.05	Not significant
MARRIED	272 (100)	133 (48.9)	139 (51.1)			
DIVORCED	7 (100)	6 (85.7)	1 (14.3)			
SEPARATED	8 (100)	3 (37.5)	5 (62.5)			
WIDOWED	75 (100)	39 (52.0)	36 (48.0)			

Table 2b: Analysis for the Factors and Predictors of Adherence among PLWHA at 24 Months

VARIABLE	FREQUENCY n=500 (%)	ADHERENCE		X^2	P-value	DECISIONS
		Good (%)	Poor (%)			
RELIGION						
NOT SPECIFIED	1 (100)	1 (100)	0 (0.00)	2.474	>0.05	Not significant
CHRISTIANITY	450 (100)	224 (49.8)	226 (50.2)			
ISLAMIC	27 (100)	11 (40.7)	16 (59.3)			
TRADITIONAL	16 (100)	6 (37.5)	10 (62.50)			
OTHERS	6 (100)	2 (33.3)	4 (66.7)			
OCCUPATION						
UNEMPLOYMENT	75 (100)	46 (61.3)	29 (38.7)	18.493	<0.001	Significant
SELF EMPLOYMENT	267 (100)	120 (44.9)	147 (55.1)			
PUBLIC SERVANTS	133 (100)	52 (46.0)	61 (54.0)			
RETIRED	19 (100)	12 (63.2)	8 (36.8)			

STUDENTS	25 (100)	10(40.0)	15 (60.0)			
EDUCATION						
NOT SPECIFIED	18 (100)	6 (33.3)	12 (66.7)	104.732	<0.001	Significant
PRIMARY	118 (100)	28 (23.7)	90 (76.3)			
SECONDARY	215 (100)	86 (40.0)	129 (60.0)			
TERTIARY	114 (100)	94 (82.5)	20 (17.5)			
NO FORMAL EDU	35 (100)	13 (37.1)	22 (62.9)			

Table 2c: Analysis for the Factors and Predictors of Adherence among PLWHA at 24 Months

VARIABLE	FREQUENCY	ADHERENCE				DECISIONS
	n=500 (%)	Good (%)	Poor (%)	X^2	P-value	
~~PLACE OF~~ RESIDENCE						
ENUGU	308 (100)	187 (60.7)	121 (39.3)	48.492	<0.001	Significant
ANAMBRA	72 (100)	22 (30.6)	50 (69.4)			
EBONYI	57 (100)	16 (28.1)	41 (71.9)			
IMO	34 (100)	14 (41.2)	20 (58.8)			
ABIA	14 (100)	6 (42.9)	8 (57.1)			
OTHERS	15 (100)	1 (6.7)	14 (93.3)			

Table 2 above shows the adherence at 24 month. Those retired, 12 (63.2%) and the unemployed, 46 (61.3%) were highest in adherence to treatment regimen than the other occupation, p<0.001. It also showed adherence was statistically significant among patients who had obtained tertiary education when compared with other educational level,

p<0.001. Also patients who lived in the same city with the place of care had highest level of adherence when compared to the others, p<0.001.

Table 3a: Analysis for the Factors and Predictors of Adherence among PLWHA at 60 Months

VARIABLE	FREQUENCY	ADHERENCE		X^2	P-value	DECISIONS
	n=500(%)	Good (%)	Poor (%)			
AGE AT DIAGNOSIS						
15-24	34 (100)	9 (26.5)	25 (73.5)	7.479	>0.05	Not significant
25-34	250 (100)	48 (23.0)	102 (68.0)			
35-44	180 (100)	36 (20.0)	144 (80.0)			
45-54	75 (100)	17 (22.7)	58 (77.3)			
≥ 55	61 (100)	19 (31.1)	42 (68.9)			
GENDER						
MALE	138 (100)	33 (23.9)	105 (76.1)	0.355	>0.05	Not significant
FEMALE	362 (100)	96 (26.5)	266 (73.5)			
MARITAL STATUS						

SINGLE	138 (100)	38 (27.5)	100 (72.5)	5.331	>0.05	Not significant
MARRIED	272 (100)	70 (25.7)	202 (74.3)			
DIVORCED	7 (100)	4 (57.1)	3 (42.9)			
SEPARATED	8 (100)	1 (12.5)	7 (87.5)			
WIDOWED	75 (100)	16 (21.3)	59 (78.7)			
RELIGION						
NOT SPECIFIED	1 (100)	1 (100)	0 (0.00)	8.403	>0.05	Not significant
CHRISTIANITY	450 (100)	116 (25.8)	334 (74.2)			
ISLAMIC	27 (100)	5 (18.5)	22 (81.5)			
TRADITIONAL	16 (100)	7 (43.8)	9 (56.2)			
OTHERS	6 (10010	0 (0.00)	2. (100) 3.			

Table 3b: Analysis for the Factors and Predictors of Adherence among PLWHA at 60 Months

VARIABLE	**FREQUENCY n=500(%)**	**ADHERENCE**		**X^2**	**P-value**	**DECISIONS**
		Good (%)	**Poor (%)**			
OCCUPATION						
UNEMPLOYMENT	75 (100)	33 (44.0)	42 (56.0)	12.233	<0.001	Significant
SELF EMPLOYMENT	267 (100)	61 (22.8)	206 (77.2)			
PUBLIC SERVANTS	113 (100)	25 (22.1)	88 (77.9)			
RETIRED	20 (100)	9 (45.0)	11 (55.0)			
STUDENTS	25 (100)	10 (40.0)	15 (60.0)			
EDUCATION						
NOT SPECIFIED	18 (100)	8 (44.4)	10 (55.6)	45.079	<0.001	Significant
PRIMARY	118 (100)	15 (12.7)	103 (87.3)			

SECONDARY	215 (100)	46 (21.4)	169 (78.6)			
TERTIARY	114 (100)	54 (47.4)	60 (52.6)			
NO FORMAL EDU	35 (100)	6 (17.1)	29 (82.9)			
PLACE OF RESIDENCE						
ENUGU	308 (100)	102 (33.1)	206 (66.9)	23.700	<0.001	Significant
ANAMBRA	72 (100)	12 (16.7)	60 (83.3)			
EBONYI	57 (100)	7 (12.3)	50 (87.7)			
IMO	34 (100)	4 (11.8)	30 (88.2)			
ABIA	14 (100)	3 (21.4)	11 (78.6)			
OTHERS	15 (100)	1 (6.7)	14 (93.3)			

Table 3 above shows the adherence at 60 month. A significant higher proportion were seen among those retired (45.0%) and the students (44.0%) when compared with other occupations, p<0.001. Also adherence at 24 months was consistently significant with those who had tertiary education as 47.4% of them adhere, p<0.01. Even though marital status, gender and age are not significant, devoiced (57.1%), female (26.5%) and age ≥55 years had highest proportion to adherence when compared with others. Finally, the result showed a statistically significant to adherence with patients who live in the same location with the place of care (33.1%) when compared with other place of residence, P<0.001.

DISCUSSION

Predictors of death include being illiterate, bedridden, with a low baseline CD4 cell counts, and on the second-line ART regimen.[11]

It was discovered that some of the reasons PLWHA did not attain virologic suppression were: Skipping medication due to perceived side effects such as nightmares, religious perceptions about healing, and missing appointments due to one reason or the other. Young people are known to forget to take their medications on weekends after a night out.[12, 13]

The findings suggested that sex has no significant influence or association with adherence. This finding agreed with the study conducted by Illyasu from Kano, that sex has no significant influence to adherence.[14] But this is contrary to the findings by Uzochukwu from Southeastern Nigeria[15] and Sudawa from Kano.[16] Even though the number of female clients attending ART clinic disproportionately outweigh the number of males. This is evident from the preponderance of females to the tune of 72.4% among the study participants. Males in our setting hardly come to routine clinics and usually get their refill drugs from their wives under the pretext of being at work. Others get supplied through health workers acting as touts for financial gain; hence, vital services like adherence counseling are inadvertently missed. Again males are more likely to travel, have a busy schedule or omit taking drugs in the presence of others to avoid disclosure.[16]

Defaulting from treatment is one of the most important problems in the management of HIV/AIDS. Low adherence can result in cross-resistance to other antiretroviral drugs.[17]Based on the in-depth interview on those survived after five years, adherence level was 100.0% and survival rate range from 97.6% to 99.8% which agreed with the report that ninety-five percent adherence to antiretroviral drugs regimen is often needed to achieve optimal rates of viral suppression in people living with HIV/AIDS.[18] Adherence level of 95% implies that a patient taking a twice-daily regiment cannot miss or delay more than 3 doses per month. This can be more difficult than it might seem particularly if the need to refill prescriptions every month, to have medications available when working and traveling, and to avoid predictable side effects of medication, are considered.[19] It is even more problematic in developing countries like Nigeria where illiteracy, poverty, long distance from HIV/AIDS care centers and poor health care facilities are common. Although there is no gold standard for evaluating adherence to medication[20], patient self-reporting and pill counts have frequently been used in evaluating adherence to ART in different parts of sub-Saharan Africa.[21-24] I adopted a combination of both patient self-reporting and one-on-one in-depth interview in this study. The low educated people, low income earners and the unemployed had lower adherence levels than the other patients. Although high level of education cannot be directly linked to higher knowledge of HIV/AIDS, better educated people generally have greater access to information and are more likely to make better-informed decisions. Even though majority of the clients in this study were Christians, yet, religion is not a predictor for adherence.

The issue of the location/residential area of the clients of this study was also not statistic significantly associated to adherence, but those clients resident in a place where health facility is situated adhered more.

CONCLUSIONS

Adherence is dependent on medication adverse effects and level of education of patients. Financial constraints, medication side effects, confidentiality, occupational factors and stigmatization were the major reasons accounting for non-adherence. A programme that will take medicines near the door step of poor patients, and implementing policies and programmes that will involve the contribution of local government councils are recommended.

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